

What is claimed is:

1. In a molding produced by an injection mold assembly having a pair of molds including a mold surface forming a cavity having a preselected volume, at least one transfer surface for transferring a mirror surface formed on said mold surface to said molding, and a gate for filling said cavity with a molten material by injection, and by injecting said molten material into said cavity via said gate and then cooling said molten material, said injection mold assembly includes at least one vent hole having a preselected opening area, and at least one bore communicated to said vent hole for applying a preselected air pressure to said molding, and a step portion formed on said mold surface between said vent hole and said transfer surface.
1. A molding as claimed in claim 1, wherein either a pressure difference or an air pressure is generated between said transfer surface and a vent hole portion of said molding facing said vent hole to thereby cause said vent hole portion to sink.
1. A molding as claimed in claim 2, wherein said step portion is formed on said mold surface where said vent hole is present.
1. A molding as claimed in claim 3, wherein said step portion isolates said vent hole and said transfer surface.

1 5. A molding as claimed in claim 3, wherein said step portion comprises a single step surrounding said vent hole.

1 6. A molding as claimed in claim 3, wherein said step portion comprise a single step similar in configuration to a contour of the mold surface where said vent hole is present.

1 7. A molding as claimed in claim 2, wherein said step portion isolates said vent hole and said transfer surface.

1 8. A molding as claimed in claim 2, wherein said step portion comprises a single step surrounding said vent hole.

1 9. A molding as claimed in claim 2, wherein said step portion comprise a single step similar in configuration to a contour of the mold surface where said vent hole is present.

1 10. A molding as claimed in claim 2, wherein said step portion comprises a projection.

1 11. A molding as claimed in claim 2, wherein said step portion comprises a recess.

1 12. A molding as claimed in claim 2, wherein said step portion is provided on said transfer surface.

1 13. A molding as claimed in claim 12, wherein said step portion comprises a pair of steps so configured as to sandwich a longitudinal surface of said transfer surface.

1 14. A molding as claimed in claim 12, wherein said step portion comprises a single step so configured as to surround said transfer surface.

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1 15. A molding as claimed in claim 2, wherein said step
portion comprises a pair of steps so configured as to sandwich
a longitudinal surface of said transfer surface.

16. A molding as claimed in claim 2, wherein said step portion comprises a single step so configured as to surround said transfer surface.

1 17. A molding as claimed in claim 2, wherein said step
portion is tapered in a cross section.

1 18. A molding as claimed in claim 2, wherein said step
portion is triangular in a cross-section.

1 19. A molding as claimed in claim 2, wherein said step
portion is arcuate in cross section.

1 20. A molding as claimed in claim 2, wherein said step
portion has a height greater than 0.1 mm inclusive.

1 21. In an injection molding method for producing a
molding by using a mold assembly having a pair of molds
including a mold surface forming a cavity having a preselected
volume, at least one transfer surface for transferring a mirror
5 surface formed said mold surfaces to said molding, and a gate
for filling said cavity with a molten material by injection, and
by injecting said molten material into said cavity via said gate
and then cooling said molten material, said mold surface is
formed with, outside of said transfer surface, at least one vent
10 hole having a preselected opening area and at least one bore
communicated to said vent hole for applying a preselected air

pressure to said molding material, and the air pressure is continuously generated via said vent hole even after a pressure of said molding material in said cavity has dropped to zero.

15 to zero.

1 22. A method as claimed in claim 21, wherein either a
pressure difference or an air pressure is generated between
said transfer surface and a vent hole portion of said molding
facing said vent hole.

1 23. A method as claimed in claim 22, wherein the air
pressure is higher than an atmospheric pressure (about 0.1
MPa) inclusive, but lower than 2 MPa inclusive.

1 24. A mold assembly having a pair of molds including a
mold surface forming a cavity having a preselected volume, at
least one transfer surface for transferring a mirror surface
formed on said mold surface to said molding, and a gate for
5 filling said cavity with a molten material by injection, and
injecting said molten material into said cavity via said gate
and then cooling said molten material, said mold surface is
formed with, outside of said transfer surface, at least one vent
hole having a preselected opening area and at least one bore
10 communicated to said vent hole for applying a preselected air
pressure to said molding material, and at least one exhaust
hole located at a position adjoining said vent hole, but not
facing said transfer surface.

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1 25. A mold assembly as claimed in claim 24, said
1 exhaust hole surrounds said vent hole.

1 26. A mold assembly as claimed in claim 24, wherein
1 said exhaust hole is similar in configuration to a contour of
1 said mold surface where said draft hole is present.

1 27. A mold assembly as claimed in claim 24, wherein
1 said exhaust hole comprises a porous member.

1 28. A mold assembly as claimed in claim 24, wherein
1 forced exhaustion means is communicated to said exhaust
1 hole.

1 29. A mold assembly as claimed in claim 24, wherein
1 said exhaust hole has an opening width of 0.001 mm to 0.5
1 mm.

1 30. A method of producing a plastic molding, comprising
1 the steps of:
5 preparing a mold assembly including at least one
 transfer surface and at least one non-transfer surface formed
 on a surface other than said transfer surface, said transfer
 surface and said non-transfer surface forming at least one
 cavity;
 injecting molten resin heated to a temperature above a
 softening point thereof into said cavity;
10 causing a resin pressure to act on said transfer surface to
 thereby cause said resin to adhere to said transfer surface,

and then cooling said resin to a temperature below the softening point;

15 opening said mold assembly in order to allow a resulting molding to be taken out; and

lowering a temperature of at least one non-transfer surface of said resin below a temperature of said resin on said transfer surface during an interval between a beginning and an end of injection of said resin into said cavity.

1 31. A method of producing a plastic molding, comprising the steps of:

5 preparing a mold assembly including at least one transfer surface and at least one none-transfer surface formed on a surface other than said transfer surface, said transfer surface and said non-transfer surface forming at least one cavity;

10 injecting molten resin heated to a temperature above a softening point thereof into said cavity;

causing a resin pressure to act on said transfer surface to thereby cause said resin to adhere to said transfer surface, and then cooling said resin to a temperature below the softening point;

15 opening said mold assembly in order to allow a resulting molding to be taken out; and

forming a gas layer between at least one non-transfer surface of said resin and said mold assembly during an

interval between a beginning and an end of injection of said resin into said cavity.

1 32. A method of producing a plastic molding, comprising the steps of:

5 preparing a mold assembly including at least one transfer surface and at least one non-transfer surface formed on a surface other than said transfer surface, said transfer surface and said non-transfer surface forming at least one cavity;

10 injecting molten resin heated to a temperature above a softening point thereof into said cavity;

15 causing a resin pressure to act on said transfer surface to thereby cause said resin to adhere to said transfer surface, and then cooling said resin to a temperature below the softening point;

20 opening said mold assembly in order to allow a resulting molding to be taken out; and

25 maintaining a portion of said mold assembly facing at least one non-transfer surface of said resin lower in temperature than a portion of said mold assembly facing said transfer surface until injection of said resin into said cavity ends.

1 33. A method of producing a plastic molding, comprising the steps of:

5 preparing a mold assembly including at least one transfer surface and at least one non-transfer surface formed on a surface other than said transfer surface, said transfer surface and said non-transfer surface forming at least one cavity;

10 injecting molten resin heated to a temperature above a softening point thereof into said cavity;

15 causing a resin pressure to act on said transfer surface to thereby cause said resin to adhere to said transfer surface, and then cooling said resin to a temperature below the softening point;

20 opening said mold assembly in order to allow a resulting molding to be taken out; and

effecting, during an interval between a beginning and an end of injection of said resin into said cavity, at least one of lowering a temperature of at least one non-transfer surface of said resin below a temperature of said resin on said transfer surface, forming a gas layer between at least one non-transfer surface of said resin and said mold assembly, and lowering a temperature of a portion of said mold assembly facing at least one non-transfer surface of said resin below a temperature of a portion of said mold assembly facing said transfer surface.

1 34. A method of producing a plastic molding, comprising the steps of:

preparing a mold assembly including at least one transfer surface and at least one non-transfer surface formed on a surface other than said transfer surface, said transfer surface and said non-transfer surface forming at least one cavity;

5 injecting molten resin heated to a temperature above a softening point thereof into said cavity;

10 causing a resin pressure to act on said transfer surface to thereby cause said resin to adhere to said transfer surface, and then cooling said resin to a temperature below the softening point;

15 opening said mold assembly in order to allow a resulting molding to be taken out;

20 effecting, during an interval between a beginning and end of injection of said resin into said cavity, at least one of lowering a temperature of at least one non-transfer surface of said resin below a temperature of said resin on said transfer surface, forming a gas layer between at least one non-transfer surface of said resin and said mold, and lowering a temperature of a mold portion facing at least one non-transfer surface of said resin below a temperature of a mold portion facing said transfer surface; and

25 pressing at least one non-transfer surface of said resin by a gas.

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